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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,666	08/30/2001	Hirofaka Yamamoto	011063	9199

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EXAMINER

SHEWAREGED, BETELHEM

ART UNIT PAPER NUMBER

1774

DATE MAILED: 12/13/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,666

Applicant(s)

YAMAMOTO, HIROTAKA

Examiner

Betelhem Shewareged

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 6-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention: A: Ink jet recording layer (claims 1-5); B: Ink jet recording sheet having cationic organic material on the vicinity of the surface of the layer (claims 6-10); C: Ink jet recording sheet with silica having specific diameter and oil absorptiveness (claims 11-19).
2. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, there are no generic claims.
3. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.
4. Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).
5. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record

showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

6. During a telephone conversation with Ken-Ichi Hattori on 11/06/2002 a provisional election was made without traverse to prosecute the invention of Species A, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw-Klein et al. (US 6,110,601) in view of Sekiguchi et al. (US 6,312,794).

Shaw-Klein discloses an ink jet recording element comprising a support, a water absorbing layer on the support, and an image recording layer on the water absorbing layer (col. 2, line 25). The image recording layer is equivalent to the claimed ink receiving layer. The image recording layer comprises pigments such as porous silica (col. 3, line 33), a binder such as polyvinyl alcohol (col. 3, line 40), cationic mordant

such as dicyanodiamide condensate (col. 3, lines 56 and 62), a hydrated alumina (col. 4, line 23), and aluminum chloride. The cationic mordant is equivalent to the claimed cationic organic material, and the amount contained in the receiving layer is 0-20% (col. 4, line 58). The content of the pigment is 25-70% (col. 4, line 53). Shaw-Klein does not teach silanol-modified polyvinyl alcohol as the binder, and does not teach the claimed pH value.

Sekiguchi teaches an ink jet recording sheet having an ink receiving layer on a support (abstract). The ink receiving layer comprises silica particles (col. 4, line 9), a binder such as silanol-modified polyvinyl alcohol (col. 7, line 12), and cationic fixing agent (col. 7, line 42). The pH value of the ink receiving layer is at most 6 (col. 7, line 50) which includes the claimed value of 4 or less.

Shaw-Klein and Sekiguchi are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the silanol-modified polyvinyl alcohol binder of Sekiguchi with the invention of Shaw-Klein in order to improve the adhesion among pigments and between the support and the image recording layer (col. 7, lines 8-11 of Sekiguchi). Furthermore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to keep a pH value of an ink receiving layer below a certain value i.e, 6 so as to reduce yellowing of the recording layer under a blank state (col. 7, lines 50-59).

The claimed cationic organic material is impregnated into the claimed ink receiving layer after the ink receiving layer is formed onto the substrate. The process by which

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the cationic organic material is applied is a process limitation, and is not dispositive of the issue of the patentability of the instant article claims.

9. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw-Klein et al. (US 6,110,601) in view of Graczyk et al. (US 6,372,329).

Shaw-Klein discloses an ink jet recording element comprising a support, a water absorbing layer on the support, and an image recording layer on the water absorbing layer (col. 2, line 25). The image recording layer is equivalent to the claimed ink receiving layer. The image recording layer comprises pigments such as porous silica (col. 3, line 33), a binder such as polyvinyl alcohol (col. 3, line 40), cationic mordant such as dicyanodiamide condensate (col. 3, lines 56 and 62), a hydrated alumina (col. 4, line 23), and aluminum chloride. The cationic mordant is equivalent to the claimed cationic organic material, and the amount contained in the receiving layer is 0-20% (col. 4, line 58). The content of the pigment is 25-70% (col. 4, line 53). Shaw-Klein does not teach the claimed pH value.

Graczyk teaches an ink jet recording medium having a substrate coated with two ink receiving layer (col. 3, line 38), wherein the ink receiving layers are a first ink receiving layer and a second ink receiving layer. The second ink receiving layer is equivalent to the claimed ink receiving layer. The second ink receiving contains a binder such as polyvinyl alcohol (col. 4, line 29), a dye fixative such as cationically-modified polymers (col. 4, line 62), and ink absorbing pigments such as silica (col. 5,

line 20). The second ink receiving layer has a pH value of no greater than 4 (col. 5, line 47).

Shaw-Klein and Graczyk are analogous art because they are from the same field of endeavor that is the ink jet recording sheet art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to keep a pH value of an ink receiving layer below a certain value i.e, 4 so as to allow pigmented inks to better penetrate into the coating and to minimize bleeding (col. 5, line 59 of Graczyk).

The claimed cationic organic material is impregnated into the claimed ink receiving layer after the ink receiving layer is formed onto the substrate. The process by which the cationic organic material is applied is a process limitation, and is not dispositive of the issue of the patentability of the instant article claims.

10. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw-Klein et al. (US 6,110,601) in view of Liu et al. (US 5,989,378).

Shaw-Klein discloses an ink jet recording element comprising a support, a water absorbing layer on the support, and an image recording layer on the water absorbing layer (col. 2, line 25). The image recording layer is equivalent to the claimed ink receiving layer. The image recording layer comprises pigments such as porous silica (col. 3, line 33), a binder such as polyvinyl alcohol (col. 3, line 40), cationic mordant such as dicyanodiamide condensate (col. 3, lines 56 and 62), a hydrated alumina (col. 4, line 23), and aluminum chloride. The cationic mordant is equivalent to the claimed cationic organic material, and the amount contained in the receiving layer is 0-20% (col.

4, line 58). The content of the pigment is 25-70% (col. 4, line 53). Shaw-Klein does not teach silanol-modified polyvinyl alcohol as the binder.

Liu teaches an ink jet recording material containing at least one ink receiving layer formed on a support (col. 5, line 52). The uppermost receiving layer of the ink receiving layer (hereinafter "the ink receiving layer") comprises 50-100% of silica (col. 6, line 44), a binder such as silanol modified polyvinyl alcohol (col. 8, line 46), a cationic resin to increase ink fixability (col. 9, line 31). The uppermost ink receiving layer is equivalent to the claimed ink receiving layer.

Shaw-Klein and Liu are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the silanol-modified polyvinyl alcohol binder of Liu with the invention of Shaw-Klein in order to improve the adhesion among pigments and control dispersibility of pigments (col. 8, lines 52-67 of Liu).

The claimed cationic organic material is impregnated into the claimed ink receiving layer after the ink receiving layer is formed onto the substrate. The process by which the cationic organic material is applied is a process limitation, and is not dispositive of the issue of the patentability of the instant article claims.

11. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graczyk et al. (US 6,372,329) in view of Sekiguchi et al. (US 6,312,794).

Graczyk discloses an ink jet recording medium having a substrate coated with two ink receiving layer (col. 3, line 38), wherein the ink receiving layers are a first ink receiving layer and a second ink receiving layer. The second ink receiving layer is equivalent to the claimed ink receiving layer. The second ink receiving contains a binder such as polyvinyl alcohol (col. 4, line 29) and ink absorbing pigments such as silica (col. 5, line 20). The second ink receiving layer has a pH value of no greater than 4 (col. 5, line 47).

Graczyk does not disclose the claimed content of silica. The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. One of ordinary skill in the art would have been motivated to adjust the content of silica to optimize the ink absorbing properties of the layer. A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

The claimed content of the cationic organic material is 2% by weight or less, which include the value of zero. When the claimed content of cationic organic material is zero, the invention in claim 1 reads on Graczyk

Graczyk does not teach silanol-modified polyvinyl alcohol as the binder.

Sekiguchi teaches an ink jet recording sheet having an ink receiving layer on a support (abstract). The ink receiving layer comprises silica particles (col. 4, line 9), a binder such as silanol-modified polyvinyl alcohol (col. 7, line 12), and cationic fixing

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agent (col. 7, line 42). The pH value of the ink receiving layer is at most 6 (col. 7, line 50) which includes the claimed value of 4 or less.

Graczyk and Sekiguchi are analogous art because they are from the same field of endeavor that is the ink jet recording art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the silanol-modified polyvinyl alcohol binder of Sekiguchi with the invention of Graczyk in order to improve the adhesion among pigments and between the support and the ink receiving layer (col. 7, lines 8-11 of Sekiguchi).

The claimed cationic organic material is impregnated into the claimed ink receiving layer after the ink receiving layer is formed onto the substrate. The process by which the cationic organic material is applied is a process limitation, and is not dispositive of the issue of the patentability of the instant article claims.

12. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graczyk et al. (US 6,372,329) in view of Liu et al. (US 5,989,378).

Graczyk discloses an ink jet recording medium having a substrate coated with two ink receiving layer (col. 3, line 38), wherein the ink receiving layers are a first ink receiving layer and a second ink receiving layer. The second ink receiving layer is equivalent to the claimed ink receiving layer. The second ink receiving contains a binder such as polyvinyl alcohol (col. 4, line 29) and ink absorbing pigments such as silica (col. 5, line 20). The second ink receiving layer has a pH value of no greater than 4 (col. 5, line 47).

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Graczyk does not disclose the claimed content of silica. The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. One of ordinary skill in the art would have been motivated to adjust the content of silica to optimize the ink absorbing properties of the layer. A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

The claimed content of the cationic organic material is 2% by weight or less, which include the value of zero. When the claimed content of cationic organic material is zero, the invention in claim 1 reads on Graczyk

Graczyk does not teach silanol-modified polyvinyl alcohol as the binder.

Liu teaches an ink jet recording material containing at least one ink receiving layer formed on a support (col. 5, line 52). The uppermost receiving layer of the ink receiving layer (hereinafter "the ink receiving layer") comprises 50-100% of silica (col. 6, line 44) and a binder such as silanol modified polyvinyl alcohol (col. 8, line 46). The uppermost ink receiving layer is equivalent to the claimed ink receiving layer.

Graczyk and Liu are analogous art because they are from the same field of endeavor that is the ink jet recording medium art. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the silanol-modified polyvinyl alcohol binder of Liu with the invention of Graczyk in order to improve

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the adhesion among pigments and control dispersibility of pigments (col. 8, lines 52-67 of Liu).

The claimed cationic organic material is impregnated into the claimed ink receiving layer after the ink receiving layer is formed onto the substrate. The process by which the cationic organic material is applied is a process limitation, and is not dispositive of the issue of the patentability of the instant article claims.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betelhem Shewareged whose telephone number is 703-305-0389. The examiner can normally be reached on Mon.-Thur. 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H Kelly can be reached on 703-308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

BS *BS*
December 6, 2002.

CYNTHIA H. KELLY
SUPERVISOR, PATENT EXAMINER
TELEPHONE 703-308-1700

Cynthia H. Kelly